Theme Area: Facilities and Infrastructure

Program Area: Materials and Geotechnical

Project No.: FI00.02

Project Title: Physical Properties of Aged Concrete

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Abstract: A primary task for Reclamation is to understand the degree and effect of deterioration due to aging on its structures. The physical properties of cored concrete are analyzed as an indicator of the level of deterioration. Concrete test results are compared to the fresh properties of the concrete mix and to previous test programs to determine the degree of degradation over time.

Alkali Aggregate Reaction (AAR) is a deterioration issue that has been detected in several Reclamation structures. The extent of degradation due to AAR may or may not be limited; it is dependent upon the type of concrete and environmental conditions. Reclamation tracks the progression of AAR in its structures using several methods, including the study of the changes in material properties over time. However, we cannot accurately predict the degree of deterioration that a structure may experience due to AAR. We can detect AAR in core samples, but we do not have laboratory methods that predict the extent to which AAR will affect the integrity of the structure.

There have been several, recent industry publications that describe new methods to detect, control, and test the degree of AAR, and these may benefit Reclamation. This study will research new test methods that will enhance our understanding of AAR.

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